

CLAIMS:

1. A display scanner for reading a barcode comprising:

an optical panel including a plurality of stacked optical waveguides defining an inlet face at one end and a screen at an opposite end, and each of said waveguides has a core laminated between cladding;

a projector optically aligned with said inlet face for projecting a scan beam of light into said panel for transmission from said screen as a scan line to scan said barcode;

a light sensor disposed in optical communication with said inlet face for detecting a return beam reflected from said barcode into said screen; and

a decoder operatively joined with said sensor for decoding said return beam detected by said sensor to read said barcode.

2. A scanner according to claim 1 wherein said projector further comprises a pattern generator for defining a plurality of said scan lines with different orientations in a collective pattern at said screen for reading different orientations of said barcode.

3. A scanner according to claim 2 wherein said projector comprises a video display projector configured to display said pattern as a video image thereof.

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4. A scanner according to claim 2 wherein said projector comprises a rotary spinner and cooperating pattern mirrors for interrupting said scan beam into said scan lines in each revolution of said spinner.

5. A scanner according to claim 2 further comprising a light coupler disposed atop said screen for transmitting said scan lines outwardly therefrom.

6. A scanner according to claim 5 wherein said coupler comprises fresnel prismatic grooves.

7. A scanner according to claim 6 wherein said waveguides are oblique to said inlet face and screen.

8. A scanner according to claim 7 wherein said coupler is configured to turn said scan beam in a range of about 45° to about 90°.

9. A scanner according to claim 6 wherein said coupler comprises a transmissive right angle film.

10. A scanner according to claim 2 wherein said sensor comprises a photodiode adjoining said inlet face.

11. A scanner according to claim 10 wherein said sensor is disposed at one end of said inlet face out of range of said projector.

12. A scanner according to claim 10 wherein said sensor comprises a photodiode array adjoining respective ones of said waveguides for providing redundant detection of respective ones of said return beams.

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13. A scanner according to claim 2 wherein said projector is configured for projecting into said panel both said scan beam and a video beam, with said scan beam forming said scan line pattern at said screen, and said video beam forming a visual display image.

14. A scanner according to claim 13 wherein said projector comprises a common video display projector configured to display both said scan beam and video beam.

15. A scanner according to claim 14 wherein said projector further comprises a light source for producing said light beam, a modulator for modulating said light beam to form said scan line pattern and display image, and image optics for broadcasting said light beam horizontally and vertically across said inlet face for transmission through said waveguides to display said pattern and image on said screen.

16. A scanner according to claim 15 wherein said modulator comprises a digital micromirror device.

17. A scanner according to claim 13 wherein said projector comprises separate projectors configured for separately projecting said scan beam and video beam into said panel.

18. A scanner according to claim 17 wherein said projectors both comprise video display projectors.

19. A scanner according to claim 17 wherein one of said projectors comprises a video display projector for projecting said video beam, and another

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projector comprises a rotary spinner and cooperating pattern mirrors for interrupting said scan beam into said scan lines in each revolution of said spinner.

20. A scanner according to claim 17 further comprising a beam combiner optically aligned with said separate projectors for combining said scan and video beams into said panel.

21. A scanner according to claim 20 wherein said beam combiner comprises a dichroic mirror.

22. A scanner according to claim 21 wherein said scan beam projector is configured for transmitting an infrared scan beam, and said video projector is configured for transmitting a visible video beam.

23. A scanner according to claim 13 wherein said projector includes corresponding image optics to focus said video beam at said screen, and to focus said scan beam outside said screen.

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